



# North Vancouver Online Learning

**Course Plan:** Mathematics 12 Apprenticeship

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## **Course Description:**

OL Math 12 Apprenticeship is the BC Provincial Pre-Calculus Mathematics 12 course offered in an online setting. The course follows the BC Provincial curriculum and satisfies the requirements for graduation and entrance into many post-secondary institutions or programs. This pathway is designed to provide students with the mathematical understandings and critical-thinking skills identified for entry into the majority of trades and for direct entry into the work force

## **Course Expectations:**

It is expected that students will be actively engaged in the online course material. This would include, but is not limited to, viewing online lessons and taking notes, working on practice assignment questions within each unit and completing the learning guide for each unit. Students should have regular access to a computer and have a functioning email address. Teacher-Student communication is essential to a successful course experience, so students need to be good online communicators. The most efficient way of communication is via the messaging system built into the Brightspace course environment.

## **Time Line:**

There is continuous enrollment into OL Mathematics 12 Apprenticeship and there is no specific end date; however, there may be external time restraints placed on the student by post secondary enrolment policies. For example, UBC may be moving towards course completion in early spring, and other institutions request that at least 50% of the course must be completed by March 1st. Other post secondary institutions may have similar timelines.

**NOTE:** It is the responsibility of the student to become familiar with the entrance timeline and demands of their post secondary of interest.

## **BIG IDEAS:**

Design involves investigating, planning, creating, and evaluating.

Constructing 3D objects often requires a 2D plan.

Transferring mathematical skills between problems requires conceptual understanding and flexible thinking.

Proportional reasoning is used to make sense of multiplicative relationships.

Choosing a tool based on required precision and accuracy is important when measuring.  
Learning Standards

## **Curricular Competencies**

Students are expected to do the following:

**Reasoning and modelling:** · Develop thinking strategies to solve puzzles and play games · Explore, analyze, and apply mathematical ideas using reason, technology, and other tools · Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number · Model with mathematics in situational contexts · Think creatively and with curiosity and wonder when exploring problems

**Understanding and solving:** · Develop, demonstrate, and apply conceptual understanding of mathematical ideas through play, story, inquiry, and problem solving · Visualize to explore and illustrate mathematical concepts and relationships · Apply flexible and strategic approaches to solve problems · Solve problems with persistence and a positive disposition · Engage in problem-solving experiences connected with place, story, cultural practices, and perspectives relevant to local First Peoples communities, the local community, and other cultures

**Communicating and representing:** · Explain and justify mathematical ideas and decisions in many ways · Represent mathematical ideas in concrete, pictorial, and symbolic forms · Use mathematical vocabulary and language to contribute to discussions in the classroom · Take risks when offering ideas in classroom discourse

**Connecting and reflecting:** · Reflect on mathematical thinking · Connect mathematical concepts with each other, other areas, and personal interests · Use mistakes as opportunities to advance learning · Incorporate First Peoples worldviews, perspectives, knowledge, and practices to make connections with mathematical concepts

## **Content Learning Standards:**

Measuring: — unit analysis — precision and accuracy — breaking of units into smaller divisions to get more precise measurements — extension: project or presentation to share measurement concepts and skills used in a field/career of interest

Triangles: — situational examples such as stairs and roofs — application of Pythagorean theorem — situations involving multiple right-angle triangles

3D objects: — creating and reading various types of technical drawings — extension: project or presentation to share geometry concepts and skills used in a field/career of interest

Mathematics in the workplace: — compare and contrast mathematics used in different workplace contexts — interview someone working in a field of interest — extension: project that includes an element of design and mathematical thinking

Financial Literacy: — business investments, loans (lease versus buy), graphical representations of financial growth, projections, expenses — extension: project or presentation to share mathematical concepts and skills used in a field/career of interest

After successful completion of Mathematics Apprenticeship 12 students can choose to move forward to their post-secondary studies or a workplace to continue to develop the conceptual knowledge and skill set that will be useful for them moving forward.

Recommended Prerequisite: Mathematics 11 Workplace Resources: Online course material